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BRINP3-derived peptides - A Breakthrough in Obesity Treatment

Stanford researchers have discovered BRP3, a novel peptide derived from the BRINP3 protein, which effectively reduces food intake and body fat in mice, while preserving muscle mass, thus offering a novel, safe and effective solution to treat obesity.

Obesity is a major global health concern expected to affect over 25% of the global population by 2035. It shortens life expectancy by 5-10 years and increases the risk of death from diabetes, heart disease, and other related conditions. Current weight loss methods, including caloric restriction and existing weight loss drugs, often lead to muscle mass reduction, compromising overall health and physical function. Combination therapies have been explored, but no current treatment prevents muscle loss while promoting weight loss. Effective drugs that can reverse obesity without causing significant side effects, including loss of muscle mass, remain an unmet need.

To address this, Stanford researchers have discovered a novel peptide (BRP3) derived from the human BRINP3 protein that reverses obesity without causing muscle loss. BRP3 is a peptide cleaved from the parent protein BRINP3 and detected in human plasma. When administered to diet-induced obese mice, the peptide BRP3 reduced food intake within 30 minutes of a single injection, with effects lasting up to 3 hours. Subsequent studies showed that daily administration of BRP3 in diet-induced obese mice led to significant weight loss by 10% and improved glucose tolerance, with weight loss attributed to a reduction in subcutaneous and visceral fat mass, without changes in skeletal or heart muscle mass.

In summary, this invention introduces BRP3, a BRINP3 peptide, which combats obesity by suppressing food intake and body fat without affecting muscle mass, showcasing its therapeutic potential as a safe and promising anti-obesity treatment.

Stage of Development:

In vivo. Next steps include working on determining the MOA (receptor) and evaluating side effects using toxicology studies.

Applications

- Anti-obesity peptide therapeutics for humans
- Attractive to healthcare providers, patients and researchers seeking efficient weight loss solutions

Advantages

- Novel, effective, and safe obesity treatment
- Reduces fat mass without affecting muscle mass, unlike existing therapies such as GLP1-RAs that lead to both fat and muscle mass loss.
- Muscle preservation ensures that patients maintain their physical strength and overall health while losing weight.

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